

HM-Series



*HM-224 /
HM-324 XP+ with 2X extender*

*HM-224 /
HM-324 XP+*

Portable thermal imaging cameras
for commercial maritime applications



Night-time
navigation



Safety and security



Man overboard
search

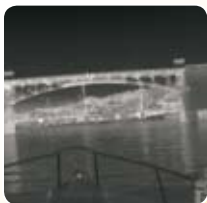
HM-Series

Portable thermal imaging cameras for maritime applications

HM-Series: use the power of thermal imaging for night-time navigation and to increase shipboard security

The HM-Series are handheld shock-resistant thermal imaging cameras. They produce a crisp image in the darkest of nights. The HM-Series will dramatically increase your situational awareness. The HM-Series can be used on board of all types of vessels. Yachts, commercial ships, tug and tow boats, work boats, police and law enforcement boats will all benefit from the power of thermal imaging.

The HM-Series thermal imaging cameras are excellent tools for night-time navigation, securing any shipboard environment, anti-piracy and many other maritime applications. Whether you are anchored in port or sailing in the open sea, you will be able to see in total darkness.



Extremely affordable

The HM-Series are extremely affordable units. From now on, everyone can afford thermal night vision. Price is no longer an issue. There is no longer a need to use a less effective night vision technology.

Crisp thermal images

The HM-224 produces thermal images of 240 x 180 pixels. The HM-324 XP+ produces thermal images of 320 x 240 pixels on which the smallest of details can be seen. Both cameras are equipped with advanced internal camera software that delivers a crisp image without the need for user adjustments.

Choice of lenses

The HM-Series provide a 24° field of view. This offers an excellent combination of range performance and situational awareness. For longer range performance, the HM-Series can be equipped with a 2X extender which offers a 12° field of view.

Extremely portable and rugged

Weighing 660 grams, batteries included, the HM-Series are extremely compact and extremely light systems. They are ideal for go-anywhere operations, in all circumstances. They are IP67 rated.

Easy-to-operate

Ergonomic and easy-to-use, the HM-Series are fully controlled with just 5 buttons on top of the unit. Conveniently placed the backlit buttons are all right underneath your fingertips.



Hot shoe

The HM-Series come standard with a "hot shoe" which can easily be mounted on the cameras. Not only does it allow for tripod mounting, the "hot shoe" also has a power-in and video-out connection. This means the HM-Series can be fully operational on a tripod while charging the batteries.

Long battery life

The HM-Series have an operating time of over 5 hours on a single charge. They work on 4 rechargeable AA NiMH batteries that come with the camera. The HM-Series can also run on standard non-rechargeable Alkaline or Lithium Ion AA batteries.

Different versions available

The HM-Series are available in two different versions:

HM-224

The HM-224 produces thermal images of 240 x 180 pixels. It contains all the necessary features for maritime applications. With the HM-224 you can see in all weather conditions, in the darkest of nights. It operates between 0°C and +50°C.

HM-324 XP+

The HM-324 XP+ produces crisp thermal images of 320 x 240 pixels. It operates between -20°C and +60°C. It comes with a number of useful features such as:

- *Image storage:*
Allows storing thermal images in JPEG format on a removable SD-card by the touch of a button. A 1 GB SD-card holds up to 20,000 images.
- *Video storage:*
By holding a button, the HM-324 XP+ has the ability to record full frame rate MPEG-4 video. The HM-324 XP+ can record more than 2 hours of video on a 1 GB SD-card.
- *USB2 connection:*
Can be used to transfer the saved images to a PC.
- *Digital zoom*
A 2X digital zoom allows you to have a closer look at objects when necessary.



HM-Series: The power of thermal imaging in the palm of your hand

1 POWER button

Initial powering takes 60 seconds. Once on, the system is set to stand-by with a single quick press on the power button. The battery lifetime in this standby mode is more than 120 hours. Another quick press on the power button returns to ON mode. To preserve battery power in the "ON Status", auto stand-by is initiated if no buttons are pressed for 3 minutes.

2 RECORD button

On the HM-224, this button will freeze the image for up to 2 minutes. The camera will return to live imaging upon any press of the button.

On the HM-324 XP+, a single fast push of the RECORD button records a single frame of data to the SD card. During this operation the image is frozen for approximately 1 second. If the operator presses and holds the RECORD button for more than 2 seconds, video recording is started and continued until the operator releases the button. During video recording a "record" icon is visible in the viewfinder.

3 ZOOM button (HM-324 XP+ only)

Each press on the ZOOM button cycles between 2X zoom and normal view. A zoom icon is presented in the viewfinder during zoom.

4 BLACK HOT / WHITE HOT button

Each press on the BLACK HOT / WHITE HOT button cycles between Black Hot and White Hot modes.

5 BRIGHTNESS button

Each press on the BRIGHTNESS button increments to the next of 5 display brightness levels. When the maximum display brightness is reached, subsequent button presses decrement the display brightness until the minimum brightness level is reached. Thanks to this adjustable brightness, you will be able to keep your night sight capabilities.

6 Eye-piece

Provides excellent user comfort when looking through the viewfinder.

7 Rugged design

Ready for go-anywhere operation, in the harshest maritime conditions.





8 Lens

The HM-Series are equipped with lenses providing a 24° field of view. A 2X extender providing a 12° field of view is optionally available.

9 Hand strap

The HM-Series have a hand strap on both sides of the camera for both left- or right handed use.

10 SD-card slot

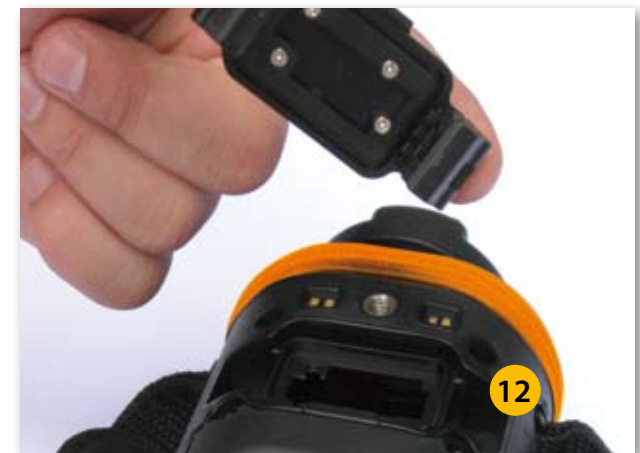
The HM-324 XP+ allows images to be stored on a removable SD-card.

11 USB2 connection

Allows for fast transfer of images from the HM-324 XP+ to a PC.

12 Battery compartment

Contains 4 AA batteries.





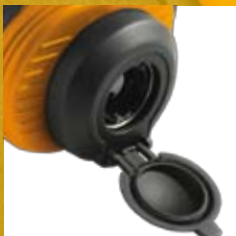
Eye-piece

Provides excellent user comfort when looking through the viewfinder.



Lens protection

A lens cap, able to open 180°, assures that the lens is protected when the HM-Series is not in use. It does not hinder the operator when the HM-Series is in operation.



Hot shoe

The HM-Series come standard with a "hot shoe" which can easily be attached to the camera. Not only does it allow for tripod mounting, the "hot shoe" also has a power-in and video-out connection.



Extender lens

All versions of the HM-Series can be equipped with a 2X extender lens. It offers a 12° field of view for longer range performance.



Car power adaptor

All versions of the HM-Series come standard with a car power adaptor to charge the batteries.



Carrying case / bag

Optionally a soft carrying bag or a rigid camera case is available. It protects the HM-Series when they are not being used.



Rigid carrying case



Soft carrying bag

A large number of applications

Thanks to the extremely affordable FLIR Systems HM-Series, more and more users can now benefit from the power of thermal imaging cameras.



Finding someone in the water after dark with a search light is more a matter of luck than skill.



The HM-Series lets you search large areas quickly.



Industrial shipping

The HM-Series are excellent tools for night-time navigation, shipboard security and anti-piracy applications.



Police and law enforcement

Police, customs and other law enforcement agencies need to see, ashore and on the water, what is happening in the dark.



Coastguard

Coastguard and rescue workers use the HM-Series as a valuable tool: man overboard searches, ship detection through light fog and darkness, security, anti-piracy, ...



Yachting

Also private yachts can benefit from the power of thermal imaging: night-time navigation, man overboard searches, shipboard security, anti-piracy, ...

Thermal imaging versus image intensification (I²)

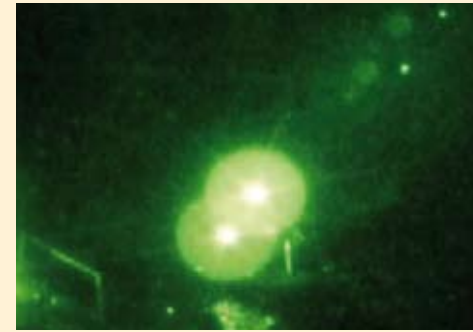


Image intensification: image is saturated by looking directly to a light source.



Thermal imaging: is not affected by the light and produces a clear image.

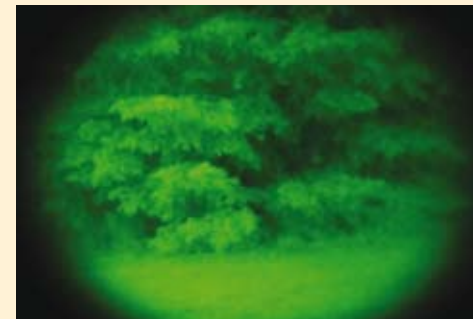


Image intensification: person hiding in bushes is practically invisible.



Thermal imaging: person hiding in bushes is clearly visible since thermal contrast is practically impossible to mask.

Image intensification, also referred to as I² technology, amplifies small amounts of visible light thousands of times so that objects can be seen at night. Image intensification does require a certain level of ambient light, but even starlight can produce an image on a cloudless night. Because the system requires at least a minimum level of ambient light, conditions such as heavy overcast can limit its effectiveness. Similarly, too much light may overwhelm the system and reduce its effectiveness.

Thermal imaging cameras like the HM-Series offer substantial benefits over image intensification. They work by detecting the heat energy being radiated and need no light at all to produce a clear image in the darkest environments. Thermal imaging cameras are not affected by the amount of light so that you will not be blinded when looking at a light source.

HM-Series Technical specifications



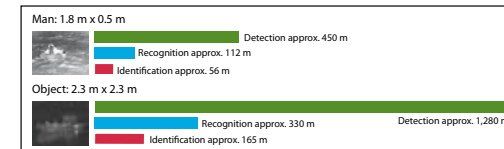
	HM-224	HM-324 XP+
IMAGING PERFORMANCE		
Detector type	Focal plane array, uncooled Vanadium Oxide (VOx) Microbolometer: 240 x 180 pixels	Focal plane array, uncooled Vanadium Oxide (VOx) Microbolometer: 320 x 240 pixels
Spectral range	7.5 to 13.5 µm	7.5 to 13.5 µm
Field of view	24° (H) x 18°(V)	24° (H) x 18°(V)
Field of view with 2X extender	12° (H) x 9°(V)	12° (H) x 9°(V)
Thermal sensitivity	<50 mK at f/1.0 at +25°C	<50 mK at f/1.0 at +25°C
Image frequency	8.3 Hz Pal / 7.5 Hz NTSC	8.3 Hz Pal / 7.5 Hz NTSC
Focus	HM-224: Fixed HM-224 with 2X extender lens: Manual	HM-324 XP+: Fixed HM-324 XP+ with 2X extender lens: Manual
Digital zoom	-	2X
Image processing	Digital Detail Enhancement (DDE)	Digital Detail Enhancement (DDE)
IMAGE PRESENTATION		
Viewfinder	LCD screen	LCD screen
Video output	NTSC or PAL composite video; RCA jack	NTSC or PAL composite video; RCA jack
Image polarity	White hot / black hot; selectable	White hot / black hot; selectable
On-screen symbology	Standard	Standard
POWER		
Requirements	4 AA Batteries; rechargeable NiMH (included), non-rechargeable Li-Ion or Alkaline	4 AA Batteries; rechargeable NiMH (included), non-rechargeable Li-Ion or Alkaline
Battery life	> 5 hours on NiMH batteries - 120 hours in stand-by with NiMH batteries	> 5 hours on NiMH batteries - 120 hours in stand-by with NiMH batteries
ENVIRONMENTAL SPECIFICATIONS		
Operating temperature range	0°C to +50°C	-20°C to +60°C
Storage temperature range	-20°C to +70°C	-40°C to +75°C
Humidity non condensing	5% to 95%	5% to 95%
Encapsulation	IP67	IP67
Drop	Operational after 1 meter drop onto concrete	Operational after 1 meter drop onto concrete
PHYSICAL CHARACTERISTICS		
Camera weight incl. Lens and batteries	660 grams	970 grams
Camera Size (L x W x H)	240 mm x 85 mm x 60 mm	265 mm x 85 mm x 75 mm
Shipping weight (camera + packaging)	2.8 kg	2.8 kg
Shipping size (camera + packaging)	450 mm x 280 mm x 180 mm	450 mm x 280 mm x 180 mm
Shipping weight (2x extender + packaging)	-	The 2X extender is being shipped in a separate box of approx. 1 kg



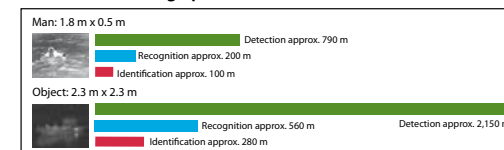
HM 324 XP+ Version only

IMAGE STORAGE	
Format	Standard JPEG - 1 GB SD-Card
Storage functions	Single image
VIDEO STORAGE	
Format	MPEG4 - 1 GB SD-card
Storage functions	9 Hz, Full frame up to limit of SD-card, approx. 8 seconds / MB
INTERFACES	
SD Card	1 slot
USB2	Image transfer to PC
IMAGING PERFORMANCE	
Electronic zoom	2X
Standard Package:	HM-Series handheld thermal imaging camera, 4 rechargeable batteries, hot shoe charging and video output attachment, car power adaptor/charger, Video output cable, USB cable, AC power adaptor/charger, lanyard, manual Also included for XP+ Version: 1 GB SD-Card
Optionally available:	Extender lens, rigid camera case or soft carrying bag

HM-224 \ HM-324 XP+ : range performance



HM-224 \ HM-324 XP+ : range performance + 2X extender lens



Actual range may vary depending on camera set-up, environmental conditions, user experience and type of monitor or display used.

Assumptions:

50 % probability of achieving objective at specified distance given 2°C temperature difference and 0.85 / km atmospheric attenuation factor.

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